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Deeply Understand and Grasp the 3 Dimensions of Self-reliance in Sports Science and Technology

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ABSTRACT

To achieve a high level of sports science and technology self-reliance is an important part of the overall deployment and implementation of science and technology self-reliance. Using the literature method and inductive logic, deductive logic and other methods, on the basis of clarifying the connotation of sports science and technology self-reliance, the historical inevitability, realistic basis and path selection of achieving high-level sports science and technology self-reliance are analyzed from 3 dimensions of history, reality and the future. The results show that the realization of high-level sports science and technology self-reliance is in line with the general trend of modern sports science and technology reform, is to deal with the fierce and complex international sports competition environment, is to support the construction of sports power national movement; after 70 years of new China, especially the reform and opening up 40 years of rapid development, China has a high-level sports science and technology self-reliance, economic and institutional solid foundation; it is necessary to further improve the new national system, deepen the coordination of science and sports, strengthen basic research and interdisciplinary integration, so as to provide a solid system and organizational guarantee ability, systematic support ability, scientific foundation and source ability for the realization of high-level sports science and technology self-reliance.

Keywords: science and technology of sports; high-level sports science and technology self-reliance; sports power; collaborative innovation of science and sports

Sports is a landmark cause to realize the great rejuvenation of the Chinese nation. The report of the 20th National Congress of the Communist Party of China pointed out: "Promote the all-round development of mass sports and competitive sports, and accelerate the construction of a sports power." [1] General Secretary Xi Jinping emphasized when inspecting the preparations for the 2022 Beijing Winter Olympics and Paralympics: "In today's world, the role of technology in competitive sports is becoming more and more prominent. To build a sports power, we must achieve a high level of self-reliance in sports science and technology. It is necessary to integrate multidisciplinary and interdisciplinary forces, coordinate the promotion of technology research and development and technology transformation, and provide strong support for my country's competitive sports to achieve greater breakthroughs." [2] This has pointed out the direction and provided basic guidance for China to speed up the construction of a sports power and promote the high-quality development of sports science and technology.

1 TO ACHIEVE A HIGH LEVEL OF SPORTS SCIENCE AND TECHNOLOGY SELF-RELIANCE OF THE HISTORICAL INEVITABILITY

Sports science and technology is a concept with the development of science and technology and sports. Therefore, sports science and technology not only includes science and technology based on the development of sports, that is, "sports science and technology is the experience summary of sports practice, is the knowledge system of various disciplines of sports", [3] is "the general name of sports science and sports technology [4] ", such as human kinesiology, sports training and so on. It also includes the application and transformation of science and technology in the field of sports, such as life science and biotechnology, material technology and other wearable sports products formed by the application in sports, the application of wind tunnel experiment technology in sports training, and the use of digital technology to develop new sports in e-sports. In fact, it is common to transplant and learn from other disciplines theories and methods in modern sports science research. [5]. Sports science and technology also combines general scientific and technological achievements with sports. The content is not only to promote the development of competitive sports, but also to promote the development of sports professional groups to the field of public health,

to achieve a wide coverage path, and to expand the realization of mass sports and competitive sports. Comprehensive development.

Based on the above understanding and facts, according to the basic connotation of China's comprehensive deployment and implementation of scientific and technological self-reliance and the existing research results on scientific and technological self-reliance and self-reliance in the field of sports, [6-7], and its necessary semantics in the field of sports, we believe that sports science and technology self-reliance is a lower concept of scientific and technological self-reliance, which can be deconstructed into two interdependent and mutually dependent components: sports science and self-reliance. The self-reliance of sports science and technology refers to the 1 country's sports, especially the basic research of competitive sports, and the realization process of the key core technology from being controlled by others to being based on itself, which represents the vertical and diachronic rising process of the 1 country's sports science and technology innovation ability; the self-reliance of sports science and technology is a concentrated summary of the supporting force, international competitiveness, influence, control and leading force of 1 country's sports science and technology innovation, it mainly characterizes the horizontal transnational comparison of sports science and technology innovation ability of 1 countries. The dialectical relationship between the two is: sports science and technology self-reliance is the premise of sports science and technology self-reliance, sports science and technology self-reliance is the goal and guarantee of sports science and technology self-reliance. The high-level sports science and technology self-reliance is the 1 kind of high-standard positioning of self-reliance, is the international advanced self-reliance. In the current environment of high-quality development of domestic sports and profound adjustment of the international sports science and technology innovation system, and the deepening of the strategic game of great powers, if sports science and technology cannot stand on its own, it will always be controlled by others.

In short, sports is a landmark cause to realize the great rejuvenation of the Chinese nation. Facing the intensified competition of international sports science and technology and the development trend of modern sports science and technology, based on the new development stage, in order to improve the national physical quality and accelerate the construction of a sports power, it is necessary to realize the self-reliance of sports science and technology in our country, so as to promote the high-quality development of sports.

The 1.1 realization of high-level sports science and technology self-reliance is the general trend of modern sports science and technology reform.

Looking at the development of sports in the world today, science and technology to help the high-quality development of sports is the obvious background and the most significant feature of the development of modern sports. As human beings tap their own natural forces to improve the level of competition tends to the limit, through sports technology means to improve competitive performance, has become inevitable. Sports science and technology is not only a systematic revelation of the nature and development law of human-natural system, but also a 1 kind of arm to human beings. Therefore, it has become an effective means for sports, especially competitive sports, to tap the potential of human beings, to break through the various restrictions set by nature, to challenge people's physical and psychological limits, to achieve higher, stronger and faster competitive sports, and to continuously improve the level of competition. For example, for competitive athletes, the technical level has reached the limit of two people's bodies, the growth rate of technical level will be smaller and smaller, and the probability of body injury in training competition will be higher and higher. At this time, scientific training and the use of new technologies have become the fundamental guarantee for athletes to improve their athletic ability. This is also confirmed by empirical research: scientific research is not only one of the nine major factors affecting the competitiveness of competitive sports, but also mainly reflected in the athletes entering the stage of high-level training. [8].

Science and technology to accelerate the transformation of sports applications, while sports is also an important position of modern scientific and technological innovation. The integration of sports and science and technology is another important feature of modern sports development. General Secretary Xi Jinping pointed out: "At present, a new round of scientific and technological revolution and industrial transformation are advancing by leaps and bounds, the scientific research paradigm is undergoing profound changes, the development of interdisciplinary integration, and the accelerated penetration and integration of science and technology and economic and social development. [9]. The transformation of science and technology into products, supporting and improving economic benefits is the consistent development logic of the integrated development of modern science-technology-industry. However, due to the non-productive nature of sports, it is at the end of the diffusion of technological innovation in the first three technological revolutions, and often lags behind other productive industries. For example, nylon came out as early as 1939 and was widely used in the chemical fiber industry and the clothing industry and military products. It was not until 30 years later that it gradually became the main material for sports swimsuits. At present, a new round of scientific and technological revolution and industrial transformation is ready to take place, and the interaction and integration of science, technology and industry is in an integrated development trend. Sports has not only become the main battlefield of the latest technology application, but also one of the main positions of technological innovation. In the technological innovation map, it has gradually moved from behind the scenes to the front desk. Major breakthroughs in sports technology have become the forerunner and foundation of the modern technological revolution. From the victory of artificial intelligence over the world's best Weiqi players to the first use of LR and AR technologies in 2016 to broadcast college football matches and NBA leagues, and the application of information technologies such as big data in sports has not lagged behind other industries. This requires that in the new development stage, our country must conform to the development logic of modern sports science and technology, and make every effort to promote the self-reliance of sports science and technology.

1.2 to achieve a high level of sports science and technology self-reliance is to deal with the fierce and complex international sports competition environment forced

From the perspective of scientific and technological innovation as a whole, the United States and its allies deliberately

deepen the containment of China's science and technology, and constantly strengthen the suppression policies of cutting off the supply of high-tech products and parts to China, sanctioning China's physical science and technology, and restricting the exchange of scientific and technological personnel. This is bound to worsen and restrict the international competitive environment of China's sports science and technology, and also profoundly remind China that key core technologies, including sports science and technology, including sports science and technology, only by achieving high-level scientific and technological self-reliance can we ensure the safety of my country's sports technology and industry, and be invincible in international competition.

Further, from the perspective of sports science and technology, under the background of the intensification of international competition in sports assisted by contemporary science and technology, sports powers such as the United States, Japan, Europe, Britain, and Russia have focused on sports science and technology innovation and accelerated the layout of related policies. As the number one science and technology power and sports power in the contemporary world, the United States uses efficient market mechanism in sports science and technology innovation, continues to give full play to the original strong advantage of "strong society", and continues to maintain the vitality and power of its sports science and technology innovation system and mechanism. At the same time, it further builds a "strong government" to support sports science and technology innovation and investment path, and strengthens cooperation between sports training and scientific research, medical treatment, universities and science and technology innovation companies, using artificial intelligence algorithms, transcranial direct current (TDCS) and other new technologies, we have continuously developed advanced systems for real-time training testing and trajectory tracking of athletes to comprehensively improve the competitive ability of athletes. [10]. The reason why Britain has made remarkable achievements in the World Olympic Games in recent years, "science and technology" has played a decisive role in it. According to statistics, 93% of the medals won by Britain at the Rio Olympics were supported by the British National Sports Institute. [11]. Cycling, as the leading event in the British Olympic Games, has won 22 gold medals and 38 medals in three consecutive Olympic Games, accounting for 29.33 per cent of the total number of gold medals and 21.22 per cent of the total number of medals respectively. the fundamental reason is that the project firmly implements the route of training led by science and technology and has invested 30 million pounds in continuous technical improvement of racing cars and clothing. They clearly stated that "if you can improve by one second through technology, you will never pass training." [11]. This shows that in the face of the fierce competition and complex environment of international sports science and technology, only by achieving high-level sports science and technology self-reliance, can our country win the initiative and more voice in the sports game of big countries.

1.3 to achieve a high level of sports science and technology self-reliance is to support the construction of sports power national movement

Building a sports power is an important task in building a modern socialist country. In the history of modern civilization, science and technology industry and sports industry combine science and technology with sports in the process of their respective evolution, so as to promote the formation of science and technology power and support sports power. Since modern times, European countries such as Britain and France, as well as the United States in the 20th century, have become sports powers one after another, relying on the source of the previous three scientific and technological revolutions and the advantages of a powerful country in science and technology. [4]. Only this scientific and technological revolution in history has our country fully participated in and eager to play a leading role in some fields. To seize this major opportunity, attach great importance to the cause of sports science and technology, and promote the self-reliance of sports science and technology, our party has always had a profound understanding. After the founding of New China, influenced by international political and economic relations, my country's sports science and technology began to gradually shift from learning from the United States and Germany to imitating the Soviet Union, and introduced the Soviet Union's sports management system and sports research organization model. In the process of marching into science, it has successively established Beijing Sports Science Research Institute and other research institutions, Beijing Sports Institute and other 6 sports colleges and universities, the social system of sports science and technology has been quickly established; and the new sports science and technology into the national "1963-1973 science and technology development plan", a strong impetus to the development of sports science and technology. After that, with the breakdown of Sino-Soviet relations and its "de-Soviet", sports science and technology implemented the scientific and technological development policy of "independence and self-reliance", and gradually accelerated the independent and systematic construction of sports science and technology.

After the reform and opening up, under the guidance of science and technology as the primary productive force and the deployment of the strategy of "rejuvenating the country through science and education", China's sports science and technology has entered the fast lane, gradually realizing the transformation from experience driven to science and technology driven. Sports science and technology has become an important driving force leading the construction of a sports power. It has generally gone through three stages [12]: after 1978, the national science conference reiterated the Marxist major proposition that "science and technology are productive forces". China ushered in the spring of science, the role and significance of sports science and technology were fully understood, and the cause of sports science and technology was started and developed. After 2001, Beijing won the right to host the 2008 Summer Olympics. Under the guidance of science and technology as the primary productive force, in order to highlight the characteristics of Beijing's "High-tech Olympics" and implement the "High-tech Olympics glory plan", the investment in sports science and technology resources continues to increase, and the seamless connection and full integration of scientific research, training and security (recovery, psychology, nutrition, etc.) provides a solid scientific and technological guarantee for the outstanding achievements of the Beijing Olympic Games, and contributes to the construction of a sports power; in 2012, beijing won the right to host the 2022 Winter Olympics. With the full implementation of the innovation-driven development strategy and the need to build a sports power, my country's sports science and technology industry has entered a stage of deepening reform and high-quality development. With preparations for the Beijing Winter Olympics as the starting point, sports science and technology The career has received full attention, and the contribution rate to the development of sports has

been greatly increased. All these show that only by achieving a high level of self-reliance in sports science and technology can we speed up the construction of a sports power.

2 TO ACHIEVE A HIGH LEVEL OF SPORTS SCIENCE AND TECHNOLOGY SELF-RELIANCE OF THE REALITY OF THE FOUNDATION

Since the founding of New China, especially the implementation of the strategy of building a sports power and a healthy China and preparing for the 2008 Beijing Olympic Games and the 2022 Beijing Winter Olympic Games, China has continuously increased its investment in sports science and technology, continuously strengthened the integration of science and sports, sports and education, and gave full play to the advantages of the new national system of sports, which has led to fundamental changes in China's sports science and technology, with historic achievements, and 1 great strides forward in sports, this has also established a strong self-confidence and foundation for the realization of China's sports science and technology self-reliance.

2.1 China has the scientific and technological foundation to achieve high-level sports science and technology self-reliance

The self-reliance of sports science and technology relies on the support and guidance of the development of national overall science and technology and sports science and technology. Since the founding of New China, my country has always placed science and technology in a prominent and important position, continuously deepened the understanding of the important role of science and technology in the construction of a modern country, and continuously strengthened the supporting and leading role of scientific and technological innovation in the construction of a modern country. The major propositions of historical materialism continue to deepen, and thoroughly implement them in practice. Especially since entering the new era of building socialism with Chinese characteristics, my country's implementation of the innovation-driven development strategy has effectively promoted my country's scientific and technological undertakings into a new historical stage and achieved systematic breakthroughs. According to the global innovation index released by the World Intellectual Property Organization over the years, China's innovation index ranking among the world's important countries has continued to improve, rising from 34th in 2012 to 11th in 2022 [13], successfully entering an innovative country. It has reached the world's advanced level in the innovation of life sciences, 5G, artificial intelligence and other digital technologies and the supply of digital rules, which support the development of sports science and technology. Scientific and technological innovation injects strong momentum into the high-quality development of sports, and lays a solid and extensive foundation for the realization of high-level sports science and technology self-reliance.

At the same time, in the field of sports science and technology, after 70 years of development in New China, especially after preparing for the Beijing Olympic Games and the 2022 Beijing Winter Olympic Games since 2001, the level and ability of sports science and technology innovation in China have been greatly improved. Sports science research funds and talent investment continue to increase. Taking the establishment of high-level sports scientific research projects as an example, from 2009 to 2019, the number of sports projects approved by the National Natural Science Foundation and the National Social Science Foundation reached 724 and 1118 respectively [14], effectively improving the basic research, applied research and soft science research capabilities of sports science in China. Science and technology have achieved remarkable results in promoting the development of sports, and the ability of sports science and technology to solve the main links and key problems of competitive sports athletes' selection, training, health and recovery has been gradually improved. Important achievements have been made in the scientific understanding and grasp of the characteristics of sports events and training laws, the research on the basic theories of sports training biology and pedagogy, the independent innovation of physical fitness reserves and complex emerging theories and methods. In particular, in recent years, the cross-border selection of athletes, the segmented training model of snow sports, and the introduction of wind tunnel experiments into training experimental tests have effectively supported the scientific training of high-level sports teams. In traditional advantageous fields such as excellent athletes' training monitoring and functional evaluation, scientific material selection, plateau and hypoxia, it has reached the world's leading level. It fully demonstrates the international competitiveness, influence and leadership of China's sports science and technology.

2.2 China has the economic foundation to achieve a high level of sports science and technology self-reliance

Economy is the material basis of sports development, which determines the scale and level of sports science and technology development. For example, the United States has become a sports power because it is the world's largest economic power and technological power, and "the relationship between sports and economy is the clearest. [14]. After more than 40 years of reform and opening up, my country has become the world's second largest economy, with comprehensive national strength reaching a new level, and economic strength has risen sharply, providing a strong human, material and financial material foundation for achieving high-level sports technology self-reliance; At the same time, my country has the world's most complete industrial system and super-large-scale sports market advantages, providing a wide range of industrial economic support and application scenarios for the realization of high-level of sports technology self-level.

Specifically, with the acceleration of the construction of a sports power and a healthy China, my country's mass sports, competitive sports, and sports industry have entered a stage of high-quality development. The people have a strong demand for high quality sports consumption, and the number of people who regularly participate in physical exercise has exceeded 0.4 billion, accounting for 35%. [14] At the same time, with the improvement of China's comprehensive national strength, Beijing has become the only "double Olympic city" in the world. China has become the source of top international events such as the Olympic Games, and the level of competitive sports has been continuously improved. The scale of the sports industry is huge. According to data from the National Bureau of Statistics, from 2015 to 2019, the scale of my country's sports industry increased from 1.71 trillion

yuan to 2.95 trillion yuan, with an average growth rate of 14.6. The overall scale of the sports industry accounted for more than 1% of GDP [14]. Among them, emerging sporting goods and consumption with greater technological content are the biggest contributors. These not only put forward higher requirements for the self-reliance of sports science and technology, but also provide a source and testing ground for the self-reliance of sports science and technology.

2.3 China has the institutional basis for achieving a high level of self-reliance in sports science and technology.

He wrote about the history of sports science and technology development in Russia, the United States, the United Kingdom and other sports powers, and implemented a competitive sports policy similar to the "national system" in preparing for the Olympic Games and conquering core technologies. [15]. China has the institutional advantage of concentrating its efforts on major events under the leadership of the party, and in the exploration of the great cause of building socialism with Chinese characteristics, it has formed a "national system" characterized by mobilizing and allocating national resources through the administrative means of the government. focus on the development of important areas or major projects urgently needed by the country, and has been successfully practiced in the field of sports. The national sports system is the 1 special sports management system and operating mechanism that my country began to implement in the sports field in the 1950 s. It is the institutional guarantee and foundation for the rapid development of contemporary Chinese sports, especially competitive sports and sports technology [16]. Under the nationwide sports system, in the early days of the founding of New China, my country quickly established a national sports science and technology strategic force with the Institute of Sports Science and Technology of the State Sports General Administration as the core and the Beijing Institute of Physical Education (the predecessor of Beijing Sport University) as the lead. The rapid rise of sports and the development of sports technology have made important contributions. Since the reform and opening up, especially since entering the new era of building socialism with Chinese characteristics, under the conditions of the socialist market economy, in order to overcome the shortcomings of the traditional national system, adapt to the new and higher requirements of building a sports power and a healthy China, and improve the efficiency of sports science and technology innovation, my country has established and improved a new national system that combines a promising government and an effective market in the field of sports, which provides an institutional guarantee for the realization of self-reliance in sports science and technology.

Generally speaking, China has a solid foundation for achieving high-level sports science and technology self-reliance. However, compared with the world's sports powers, compared with my country's requirements for building a sports power and achieving high-level sports technology self-reliance, my country's sports technology innovation ability and level still have many gaps and deficiencies. It is mainly reflected in the fact that there are still few internationally recognized major original achievements in the basic research of sports science and technology in China, and most of the basic theoretical basis still comes from foreign sports science and technology developed countries; in the face of the key problems and emerging problems that need to be solved urgently in the practice of sports, there is often a lack of effective solutions and means; the scientific and effective sports training is not enough, except for some advantageous sports, most of the scientific research and technical services can not play a decisive role in improving sports performance or winning medals in the Olympic Games [17]; a large number of core equipment rely on foreign imports, domestic research and training equipment is absent, there is a "stuck neck" technical problem. In particular, most devices need to send the collected motion data to foreign servers for analysis, and then send the analysis results to domestic servers. [18]. This undoubtedly increases the risk of confidential training information of our country's elite athletes, otherwise, it will cause the embarrassing situation of spending huge amounts of imported equipment idle.

3 TO ACHIEVE A HIGH LEVEL OF SPORTS SCIENCE AND TECHNOLOGY SELF-RELIANCE PATH SELECTION

To achieve a high level of sports science and technology self-reliance needs to play the leading role of science and technology, universities and other scientific research staff innovation and invention, and apply scientific research results to various sports teams, fitness people and other main groups, need sports and science and technology two fields to work together, this is a complex system engineering. In the new stage of development, to build a sports power and a healthy China, sports must be built as a landmark cause of the great rejuvenation of the Chinese nation, and the self-reliance of sports science and technology must be taken as the strategic support for national sports development and people's health. It is necessary to improve the new national system, strengthen the national strategic strength of sports science and technology, fight the key core technology of sports science and technology, deepen the coordination of science and sports, and strengthen the interdisciplinary integration and basic research.

3.1 and improve the new national system to provide strong institutional and organizational support for the realization of high-level sports self-reliance and self-reliance.

The report of the 20th National Congress of the Communist Party of China pointed out: "Improve the unified leadership system of the Party Central Committee for scientific and technological work, improve the new national system, strengthen the national strategic scientific and technological strength, and optimize the allocation of innovative resources. [1]. The "national system" is given new connotations and requirements. As the 1 special institutional arrangement to realize the national will in a specific field, the national system is the institutional advantage of the rapid development of sports and sports science and technology in China. However, the traditional national system often has insufficient social coordination and insufficient motivation of micro-subjects, [19] and must be further improved.

First of all, improve the party's sports and sports science and technology cause of unified leadership, strengthen strategic planning and system to promote. Under the leadership of the Communist Party of China, my

country's sports and sports science and technology have made great achievements. The realization of my country's sports science and technology self-reliance and high-quality development is inseparable from the party's strong leadership for a moment. Under the guidance of Xi Jinping's thought of socialism with Chinese characteristics in the new era and the discourse on sports power and healthy China, we should accurately grasp the scientific connotation of self-reliance and self-reliance of sports science and technology and the general trend of development at home and abroad. in the process of promoting the modernization of national sports, strengthen the strategic construction of self-reliance in sports science and technology, and clarify the strategic guidelines: persist in taking the people as the center. Promote the coordinated development of competitive sports and mass sports, give full play to the supporting, leading and leading role of sports science and technology in promoting the high-quality development of sports; strengthen the strategic foundation: strengthen the basic research and cross-integration of sports science and technology, grasp the strategic commanding heights of sports science and technology self-reliance, strengthen the construction of sports science and technology infrastructure, and provide a strong innovation platform for the basic research and application transformation of sports science and technology self-reliance; highlight the strategic focus: build a more complete scientific and technological innovation system for the harmonious development of mass sports and competitive sports, and focus on solving the "stuck neck" technical problems and underlying scientific problems of sports science and technology self-reliance; strengthen the strategic core: focus on optimizing the training, use and innovation of outstanding sports science and technology talents Institutional environment; do a good job in spatial coordination: in the process of accelerating the construction of a comprehensive national science center, we will support Beijing, Shanghai and Guangdong-Hong Kong-Macau Greater Bay Area to speed up the formation of national sports science and technology innovation centers, and promote the Beijing-Tianjin-Hebei, Yangtze River Delta, Pearl River Delta and other key regions to create a number of sources and application transformation highlands for self-reliance and self-reliance of sports science and technology, and further optimize the spatial layout of self-reliance and self-reliance of sports science and technology.

Secondly, improve the new national system, strengthen the national strategic sports science and technology strength. The primary key issue for the self-reliance of sports science and technology is to play the role of a promising government and an effective market, and to improve the new national system. The so-called promising government means that the party and the government should play an important role in the strategic decision-making of sports science and technology, especially the major basic research and common technology development related to the strategy, safety and market failure of the national sports science and technology development. The so-called effective market refers to the decisive role of the market in the allocation of resources and the main role of independent innovation of enterprises in improving the micro-realization mechanism of sports science and technology innovation, improve the ability and level of self-reliance of sports science and technology innovation subjects. Among them, the most important thing is to cultivate and strengthen the sports science and technology strategic force composed of national sports key laboratories, national sports research institutions, first-class universities and leading sports science and technology enterprises. It is necessary to increase the tilt and support to the field of sports science and technology innovation in the layout and resource allocation of national strategic scientific and technological forces such as the construction of national key laboratories and double first-class universities; in the construction of national strategic sports science and technology forces, it is necessary to collect the cutting-edge knowledge and methods of relevant disciplines, sort out various problems in the development of sports, science and technology, and list tasks; it is necessary to overcome the idea of eager for quick success and instant benefits under the pretext of "time constraints" in the Olympic Games, fully realize that the new Olympic Games will not stop, dare to carry out scientific research on "long, difficult and slow" across the Olympic cycle or even longer, and concentrate on solving the technical problems of "sticking neck" in sports science and technology and the underlying scientific problems behind it.

3.2 deepen the collaborative innovation of science and sports, and provide systematic support for the realization of high-level sports science and technology self-reliance.

First of all, improve the science and sports collaborative innovation platform and realize the innovation platform diversity. Collaborative innovation of science and sports is the product of interdisciplinary, diversified integration and cross-border cooperation in sports science and technology innovation. It not only includes the collaborative cooperation mechanism between science and technology departments and sports departments, but also is based on the complementary advantages and consistent needs of all participating elements. Its essence is the process of industry-university-research cooperation [5]. Therefore, to deepen the collaborative innovation of science and the body, we must first build a more flexible and diverse collaborative innovation platform. While attaching importance to the construction of government-led high-level competitive sports science and technology innovation centers, mass sports scientific research institutions and other physical platforms, to meet the needs of the current transformation of science and sports collaborative innovation platform from "hardware" to "software", pay more attention to the construction of "virtualization" platform, and establish a more flexible market-led virtual sports science and technology innovation platform with the help of the wide application of "Internet + "and big data, connect sports brands, clubs, sports federations, academic institutions and sports technology start-ups to improve the innovation efficiency of collaborative innovation platforms.

Secondly, to promote cross-border cooperation and integration, to achieve innovation transformation. The ultimate goal of science and sports collaboration is to realize the transformation of sports science and technology achievements and improve the innovation ability and efficiency of sports science and technology. Guided by the demand for high-quality sports development, the strategy of "going out" can be adopted for "pure sports" research and development achievements, so as to realize the transformation of competitive sports scientific research achievements into mass sports and sports industry; cutting-edge technologies in other scientific and technological fields can adopt the strategy of "bringing in" to introduce the latest advanced scientific and technological achievements into the development of sports science and technology; the sports industry should break industrial boundaries, Multilateral integration, output more innovative achievements suitable for the high-quality

development of China's sports industry.

3.3 strengthen basic research and interdisciplinary integration to provide a solid scientific foundation and source ability for the realization of high-level sports science and technology self-reliance

First, strengthen basic research. Basic research is the source and foundation of scientific and technological revolution and industrial transformation. Like the general scientific research type, the basic research of sports science research also includes pure basic research and applied basic research. At present, the pure basic research of sports in our country is very weak. Even if it comes from the National Natural Science Foundation, Social Science Foundation, Doctoral Foundation and other sports science and technology research and development projects, most of them are still applied basic research, and there are very few pure basic research projects [20]. This is an important reason for the lack of stamina of sports science and technology in our country and the lack of policy ability. To this end, it is necessary to increase investment in pure basic research of sports science and technology, guide sports science and technology talents to bravely enter the frontier areas and no man's land of sports science and technology, and produce more "0 to 1 "major breakthroughs; at the same time, it is necessary to give full play to the role of first-class sports universities and comprehensive first-class university sports research and development institutions as the main force in sports basic research, so as to enhance the self-reliance of sports science and technology in China. It is necessary to strengthen applied research and experimental development, promote the transformation and industrialization of sports scientific and technological achievements, and promote the application of basic research by solving the technical problems of "stuck neck" and the underlying scientific problems behind it, so as to realize the new technology application system of "1 to N ". It is necessary to coordinate the relationship between the two different forms of scientific and technological assistance, such as focusing on solving major basic theoretical problems of sports science and technology or improving sports ability, and the two different forms of scientific and technological assistance, such as "scientific and technological assistance services", which mainly improve the scientific and technological content of daily training, attach equal importance to the two forms, but implement different investment, management and operation mechanisms.

Secondly, strengthen the interdisciplinary integration. Sports science itself has the characteristics of cross integration, and this feature is more significant in the new era. This requires that in sports science research, it is necessary to follow the solution of sports practice problems, while taking into account the integration logic of academic and knowledge; in order to build an independent and perfect sports science and technology system, it is necessary to understand the frontier knowledge and dynamics of its related disciplines, and obtain more Knowledge sources and research technical means. On this basis, it is necessary to strengthen the cooperation of industry, university, research and application, take the needs of sports users such as sports teams and athletes as the guidance, and promote technological research and development and the transformation of scientific and technological achievements as a whole, so as to provide a wide range of strategic resources for the realization of high-level sports science and technology self-reliance.

4 CONCLUSION

Sports science and technology is the main driving force leading the high-quality development of sports. The realization of high-level sports science and technology self-reliance is to conform to the general trend of modern sports science and technology reform, is to deal with the fierce and complex international sports competition environment, is to support the construction of sports power national movement. Standing at a new historical starting point, it is necessary to take the realization of high-level sports science and technology self-reliance as an important part of the comprehensive deployment and implementation of science and technology self-reliance and self-reliance. It is necessary to further improve the new national system, deepen scientific and technological coordination, strengthen basic research and interdisciplinary integration, and provide solid institutional and organizational support capabilities, systematic support capabilities, scientific foundations and source capabilities for the realization of high-level sports science and technology self-reliance.

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